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FORM**

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09/770,486

Filing Date

1/29/01

First Named Inventor

KELLEY, RONALD J. ET AL.

Group Art Unit

1742

Examiner Name

WILKINS III, HARRY D.

Attorney Docket No.

CM01465L

**ENCLOSURES****(check all that apply)**☒ Fee Transmittal Form☐ Fee Attached☐ Amendment/Reply☐ After Final☐ Affidavits/Declaration(s)☐ Extension of time Request☐ Express Abandonment Request☐ Information Disclosure Statement☐ Certified Copy of Priority Documents☐ Response to Missing Parts/

Incomplete Application

☐ Response to Missing Parts  
Under 37 CFR 1.52 or 1.53☐ Assignment Papers  
(for an Application)  
☐ Drawing(s)☐ Licensing-Related papers☐ Petition☐ Petition to Convert to a  
Provisional Application☐ Power of Attorney, Revocation,  
Change of Correspondence  
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Communication to Group  
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(please identify below)Remarks**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**Firm or  
Individual

Randi L. Karpinia

Registration No.

46,148

Signature  
Date

7/29/04

**CERTIFICATE OF MAILING OR TRANSMISSION**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage thereon, as first-class mail, in an envelope addressed to: Mail Stop: Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Typed or printed name

Silvana Wiltshire

Signature

Date

7/29/04



# FEE TRANSMITTAL for FY 2004

Patent fees are subject to annual revision

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT

(\$)**330.00**

## Complete if Known

Application No. 09/770,486

Filing Date 1/29/01

First Named Inventor KELLEY, RONALD J. ET AL.

Examiner Name Wilkins III, Harry D.

Group Art Unit 1742

Attorney Docket No. CM01465L

## METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account

Deposit Account Number

50-2117

Deposit Account Name

Motorola, Inc.

The Commissioner is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayment

☒ Charge any additional fee(s) during the pendency of this application, except for issue fee

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee \$	Fee Code	Fee \$		
1001	770	2001	370	Utility filing fee	
1006	770	2006	370	Utility filing fee CPA	
1002	330	2002	165	Design filing fee	
1007	330	2007	165	Design filing fee CPA	
1003	510	2003	255	Plant filing fee	
1004	750	2004	370	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) (\$)

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below		Fee Paid
Total Claims						
5	-20*		x	18	=	
Independent						
Claims	2	-3*	x	36	=	
Multiple Dependent				280	=	

Large Entity		Small Entity		Fee Description
Fee Code	Fee \$	Fee Code	Fee \$	
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple dependent claim, if not paid
1204	84	2204	42	**Reissue independent claims over original patent
1205	18	2205	9	**Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

\*\*or number previously paid, if greater. For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late Provisional filing	
1053	130	1053	130	Non-English specification	
1812	2520	1812	2520	For filing a request for ex parte Reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1840*	1805	1840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within 1st month	
1252	410	2252	200	Extension for reply within 2nd month	
1253	930	2253	460	Extension for reply within 3rd month	
1254	1450	2254	720	Extension for reply within 4th month	
1255	1970	2255	980	Extension for reply within 5th month	
1401	320	2401	160	Notice of Appeal	
1402	330	2402	160	Filing a brief in support of an appeal	330
1504		1504		Publication fee for early, voluntary, or normal publication	
1403	280	2403	140	Request for oral hearing	
1505	300	1505	300	Publication fee for republication	
1451	1510	1451	1510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1300	2453	640	Petition to revive - unintentional	
1501	1300	2501	640	Utility issue fee (or reissue)	
1502	470	2502	230	Design issue fee	
1503	630	2503	310	Plant issue fee	
1460	130	1460	50	Petitions to the Commissioner	
1808	130	1808	130	Processing fee CFR 1.17(i)	
1807	50	1807	50	Processing fee for provisional appls.	
1806	180	1806	180	Submission of IDS	
8021	40	8021	40	Recording each patent assignment per property (times # of properties)	
1809	750	2809	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	750	2810	370	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	750	2801	370	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
1814	110	2814	55	Statutory Disclaimer	

Other fee (specify)

\*Reduced by Basic Filing Fee Pd

SUBTOTAL (3) \$ 330

## SUBMITTED BY

Name (Print) Randi L. Karpinia

Signature

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## Complete (if applicable)

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Date 7/29/04



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of: Kelley, Ronald J., et al. )  
Serial No. 09/770,486 )  
Filing Date: 01/29/2001 ) Examiner: Wilkins III, Harry D.  
Title: Hydrogen Recharging System for Fuel ) Group Art Unit No. 1742  
Cell Hydride Storage Reservoir ) Confirmation No. 6842  
Attorney Docket No. CM01465L )

**APPELLANTS' BRIEF UNDER 37 CFR 1.192**

Commissioner for Patents  
Mail Stop Appeal Brief-Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

This is an appeal from the Final Rejection dated May 26, 2004 of Claims 1, 3, 6-17, and 19-21, all the claims pending herein and is in furtherance of the Notice of Appeal in this case filed July 27, 2004. The fees required under 37 C.F.R. § 1.17 are taken care of in the accompanying Fee Transmittal. This brief is transmitted in triplicate as required under 37 C.F.R. § 1.192(a).

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### **I. REAL PARTY IN INTEREST**

The undersigned, Randi L. Karpinia, Attorney for the Appellants, certifies the following:

The name of the real party in interest in this appeal is Motorola, Inc., a Delaware corporation. Appellants assigned all their rights, title and interest in and to the above-captioned patent application (hereinafter "Subject Application") to Motorola, Inc. as evidenced by the assignments recorded in the United States Patent and Trademark Office on 01/29/2001 at Reel No. 011500, Frame No. 0592 and on 03/26/2001 at Reel No. 011696, Frame No. 0963.

### **II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals of interferences known to the Applicant, the Applicant's legal representative, or assignee which would directly affect or be directly affected by or having a bearing on the Board's decision in this pending appeal.

### **III. STATUS OF THE CLAIMS**

1, 3, 6-17, and 19-21 are pending herein and all are appealed.

Claims 1, 3, 6, 8, 9, 14-17, and 19-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Teitel (US patent number 4,211,537) in view of Appleby (US patent number 5,813,222).

Claims 7 and 10-13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Teitel (US patent number 4,211,537) in view of Appleby (US patent number 5,813,222) and further in view of Teitel (US patent number 4,302,217).

### **IV. STATUS OF THE AMENDMENTS**

There have not been any amendments to the claims filed subsequent to the final rejection, dated May 26, 2004.

## **V. SUMMARY OF THE INVENTION**

In a first embodiment, the present invention provides for a hydrogen recharging system for a fuel cell hydride storage reservoir, comprising: an electrolyzer to hydrolyze liquid water to hydrogen gas and oxygen gas, said electrolyzer connected to a water supply; a hydrogen gas accumulator; a dryer situated between and connected to the electrolyzer and the hydrogen gas accumulator, wherein the dryer is adapted to dry the hydrogen gas produced by the electrolyzer, and wherein the hydrogen gas accumulator is adapted to store the dried hydrogen gas; and a heat exchanger coupled to the fuel cell hydride storage reservoir, wherein in response to the coupling of the fuel cell hydride storage reservoir to the hydrogen recharging system. The heat exchanger is adapted to: evacuate the fuel cell hydride storage reservoir by applying heat, and enhance the fuel cell hydride storage reservoir's ability to recharge by removing heat. Upon detection of the heat removal from the fuel cell hydride storage reservoir the stored hydrogen gas is rapidly transferred from the hydrogen gas accumulator to the hydride storage reservoir, to be retained in the hydride storage reservoir in the form of a metal hydride.

In a second embodiment, the present invention provides for a method of recharging hydrogen within a fuel cell, comprising: hydrolyzing liquid water to produce a hydrogen gas and an oxygen gas; drying the hydrogen gas; storing the dried hydrogen gas in an accumulator; evacuating a connected hydride storage container by applying heat; cooling the connected hydride storage container to enhance the efficiency of transfer of the stored hydrogen gas from the accumulator to the connected hydride storage container; and rapidly transferring the stored hydrogen gas from the accumulator to the connected hydride storage container.

## **VI. ISSUES FOR CONSIDERATION ON APPEAL**

1. Whether Claims 1, 3, 6, 8, 9, 14-17, and 19-21 are unpatentable under 35 U.S.C. 103(a) as being obvious over Teitel (US patent number 4,211,537) in view of Appleby (US patent number 5,813,222).

2. Whether Claims 7 and 10-13 are unpatentable under 35 U.S.C. 103(a) as being obvious over Teitel (US patent number 4,211,537) in view of Appleby (US patent number 5,813,222) and further in view of Teitel (US patent number 4,302,217).

## **VII. GROUPING OF THE CLAIMS**

Claims 1, 3, 6-17, and 19-21 stand alone and do not stand or fall together. The claims are grouped individually, and in the appropriate part or parts of the arguments below reasons as to why Appellants consider the rejected claims to be separately patentable are presented.

## **VIII. ARGUMENTS**

1. *Whether Claims 1, 3, 6, 8, 9, 14-17, and 19-21 are unpatentable under 35 U.S.C. 103(a) as being obvious over Teitel (US patent number 4,211,537) in view of Appleby (US patent number 5,813,222).*

A) TEITEL (US PATENT NUMBER 4,211,537) IN VIEW OF APPLEBY (US PATENT NUMBER 5,813,222). TAKEN SINGLY OR IN COMBINATION DO NOT ANTICIPATE THE INVENTION AS RECITED IN CLAIMS 1, 3, 6, 8, 9, 14-17, AND 19-21.

Regarding Claims 1 and 14, the present invention as recited in independent Claims 1 and 14 include the limitation that the hydrogen recharging system includes “a heat exchanger coupled to the fuel cell hydride storage reservoir, wherein in response to the coupling of the fuel cell hydride storage reservoir to the hydrogen recharging system, the heat exchanger is adapted to: evacuate the fuel cell hydride storage reservoir by applying heat; and enhance the fuel cell hydride storage reservoir’s ability to recharge by removing heat.” Independent Claims 1 and 14 further include the limitation that the stored hydrogen gas is rapidly transferred “upon detection of the heat removal from the fuel cell hydride storage reservoir.”

Applicant respectfully submits that Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) does not anticipate the invention recited in currently pending Claims 1 and 14. Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) does not anticipate evacuating a hydride storage reservoir by applying heat, enhancing the transfer efficiency capability of the hydride storage reservoir by then removing heat, and then rapidly transferring stored hydrogen gas to the hydride storage reservoir upon detection of the heat removal. Applicant submits that the Teitel patent actually teaches away from the present invention since in Teitel there is no attempt or intention to heat the reservoir for the purpose of evacuation. In contrast, Teitel teaches heating to increase the release of hydrogen.

Applicants respectfully disagree with the Examiner's response in the Office Action dated May 26, 2004, page 3, paragraph 2 in which the Examiner categorizes the teachings of Teitel to include the functionality of Claims 1 and 14. Specifically, there is no implicit or explicit indication in the cited passages of Teitel that the hydrogen gas is rapidly transferred from the accumulator to the connected hydride storage reservoir.

Applicants submit that claims 3, 6, 8, and 9 are allowable over the cited references based on their dependencies upon currently pending claim 1 which claim was shown to be allowable above. In addition, Applicants submit that claims 3, 6, 8, and 9 are independently patentable because they include limitations not taught or suggested by the cited references. Therefore, since claims 3, 6, 8, and 9 introduce additional subject matter that, particularly when considered in the context of the recitations of amended claim 1, constitutes patentable subject matter, Applicants respectfully submit that claims 3, 6, 8, and 9 are in proper condition for allowance and request that claims 3, 6, 8, and 9 may now be passed to allowance.

Regarding independent Claim 15, the present invention of Claim 15 includes the steps of "evacuating a connected hydride storage container by applying heat; cooling the connected hydride storage container to enhance the efficiency of transfer of the stored hydrogen gas from the accumulator to the connected hydride storage container; and rapidly transferring the stored hydrogen gas from the accumulator to the connected hydride storage container."

Applicant respectfully submits that Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) does not anticipate the invention recited in currently pending Claim 15. Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) does not anticipate evacuating a hydride storage reservoir by applying heat, cooling the hydride storage reservoir to enhance transfer efficiency, and then rapidly transferring stored hydrogen gas to the hydride storage reservoir. Applicant submits that the Teitel patent actually teaches away from the present invention since in Teitel there is no attempt or intention to heat the reservoir for the purpose of evacuation. In contrast, Teitel teaches heating to increase the release of hydrogen.

Applicants respectfully disagree with the Examiner's response in the Office Action dated May 26, 2004, page 5, paragraph 2 in which the Examiner categorizes the teachings of Teitel to include the method of Claim 15. Specifically, there is no implicit or explicit indication in the



cited passages of Teitel that the hydrogen gas is rapidly transferred from the accumulator to the connected hydride storage container.

Applicants submit that claims 16, 17, 19, and 20 are allowable over the cited references based on their dependencies upon currently pending claim 15 which claim was shown to be allowable above. In addition, Applicants submit that claims 16, 17, 19, and 20 are independently patentable because they include limitations not taught or suggested by the cited references. Therefore, since claims 16, 17, 19, and 20 introduce additional subject matter that, particularly when considered in the context of the recitations of amended claim 15, constitutes patentable subject matter, Applicants respectfully submit that claims 16, 17, 19, and 20 are in proper condition for allowance and request that claims 16, 17, 19, and 20 may now be passed to allowance.

Regarding, independent Claim 21, the present invention of Claim 21 includes the steps of “cooling the hydride storage reservoir to enhance the efficiency of stored hydrogen gas transfer to the hydride storage reservoir; and opening a valve to rapidly transfer the stored hydrogen gas to the hydride storage reservoir, thereby causing the recharging of the hydride storage reservoir.”

Applicant respectfully submits that Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) does not anticipate the invention recited in currently pending Claim 21. Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) does not anticipate cooling the hydride storage reservoir to enhance transfer efficiency, and then opening a valve to rapidly transfer stored hydrogen gas to the hydride storage reservoir. Applicant submits that the Teitel patent actually teaches away from the present invention since in Teitel there is no attempt or intention to heat the reservoir for the purpose of evacuation, cool the reservoir to enhance transfer efficiency, and then open a valve to begin the transfer of the stored hydrogen gas. In contrast, Teitel teaches heating to increase the release of hydrogen.

**B) THE EXAMINER HAS NOT MET THE PATENT OFFICE’S BURDEN OF PRESENTING A PRIMA FACIE CASE OF OBVIOUSNESS OF CLAIMS 1, 3, 6, 8, 9, 14-17, AND 19-21 AS BEING UNPATENTABLE UNDER 35 U.S.C. 103(A) OVER TEITEL (US PATENT NUMBER 4,211,537) IN VIEW OF APPLEBY (US PATENT NUMBER 5,813,222) AND FURTHER IN VIEW OF TEITEL (US PATENT NUMBER 4,302,217).**

Applicants respectfully submit that the Examiner has not met the Patent Office's burden of presenting a prima facie case of obviousness as recited in the MANUAL OF PATENT EXAMINING PROCEDURE 706.02(j) and reproduced below:

**To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.** Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). **The initial burden is on the examiner** to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter.1985). *(emphasis added)*

Thus, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir.2000).

Applicants respectfully submit that there is no suggestion nor motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the teachings of Appleby (U.S. 5,813,222) with the teachings of Teitel (U.S. 4,211,537). Applicants further respectfully submit that the references, considered as a whole, do not suggest the desirability and thus the obviousness of making the combination.

Appleby (U.S. 5,813,222) describes a "Method and Apparatus for Heating a Catalytic Converter to Reduce Emissions." (see title) The invention of Appleby (U.S. 5,813,222) "relates generally to the field of catalysis for the reduction of emissions from internal combustion

engines.” (see col. 1, lines 8-10) The invention of Appleby (U.S. 5,813,222) provides a method and apparatus for reducing undesirable emissions from an internal combustion engine. (see col. 3, lines 52 – 54).

Teitel (U.S. 4,211,537) describes “A Hydrogen Supply Method.” (see title) The invention of Teitel (U.S. 4,211,537) describes a method for supplying hydrogen using a “combination of a metal hydride hydrogen storage and microcavity hydrogen storage.” (see col. 1, lines 5-8). Teitel (U.S. 4,211,537) does not describe nor suggest the use of such a method in any way related to internal combustion engines.

Applicants respectfully disagrees with the Examiner’s response (see Office Action dated May 26, 2004, page 10 item 4.b.) that the “motivation comes from the desire to have a safer means for hydrogen storage production. The electrolyzer of Appleby is much safer than the hydrogen gas filled capsules of Teitel.” Applicants respectfully submit that there is no teaching, suggestion, or motivation to combine Appleby and Teitel to produce Applicants’ invention found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

Since the Patent Office bears the initial duty of supplying a factual basis supporting a rejection in a patent application, and the Examiner has not met this initial duty as described above, Applicants respectfully request the rejection of Claims 1, 3, 6, 8, 9, 14-17, and 19-21 be withdrawn and Claims 1, 3, 6, 8, 9, 14-17, and 19-21 now be passed to allowance.

2. *Whether Claims 7 and 10-13 are unpatentable under 35 U.S.C. 103(a) as being obvious over Teitel (US patent number 4,211,537) in view of Appleby (US patent number 5,813,222) and further in view of Teitel (US patent number 4,302,217).*

A) TEITEL (US PATENT NUMBER 4,211,537) IN VIEW OF APPLEBY (US PATENT NUMBER 5,813,222) AND FURTHER IN VIEW OF TEITEL (US PATENT NUMBER 4,302,217) TAKEN EITHER SINGLY OR IN COMBINATION DO NOT ANTICIPATE THE INVENTION AS RECITED IN CLAIMS 7 AND 10-13.

Applicants submit that claim 7 is allowable over the cited references based on its dependency upon currently pending claim 1 which claim was shown to be allowable above. In addition, Applicants submit that claim 7 is independently patentable because it includes limitations not taught or suggested by the cited references. Therefore, since claim 7 introduces

additional subject matter that, particularly when considered in the context of the recitations of amended claim 1, constitutes patentable subject matter, Applicants respectfully submit that claim 7 is in proper condition for allowance and request that claim 7 may now be passed to allowance.

Referring to independent Claim 10, the present invention of Claim 10 includes the limitation that the heat exchanger of the system: “in response to the coupling of the fuel cell hydride storage reservoir to the hydrogen recharging system, the heat exchanger is adapted to: prior to transfer of the stored hydrogen gas, evacuate the fuel cell hydride storage reservoir by applying heat, and enhance the fuel cell hydride storage reservoir’s ability to recharge by removing heat, during transfer of the stored hydrogen gas.”

Applicant respectfully submits that Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) and further in view of Teitel (U.S. 4,302,217) does not anticipate the invention recited in currently pending Claim 10. Teitel (U.S. 4,211,537) in view of Appleby (U.S. 5,813,222) and further in view of Teitel (U.S. 4,302,217) does not anticipate evacuating a hydride storage reservoir by applying heat, and enhancing transfer efficiency by removing heat from the hydride storage reservoir. Applicant submits that the Teitel patent actually teaches away from the present invention since in Teitel there is no attempt or intention to heat the reservoir for the purpose of evacuation and remove heat to enhance transfer efficiency. In contrast, Teitel teaches heating to increase the release of hydrogen.

Applicants submit that claims 11-13 are allowable over the cited references based on their dependency upon currently pending Claim 10 which claim was shown to be allowable above. In addition, Applicants submit that claims 11-13 are independently patentable because they include limitations not taught or suggested by the cited references. Therefore, since claims 11-13 introduce additional subject matter that, particularly when considered in the context of the recitations of amended claim 10, constitutes patentable subject matter, Applicants respectfully submit that claims 11-13 are in proper condition for allowance and request that claim 11-13 may now be passed to allowance.

**B) THE EXAMINER HAS NOT MET THE PATENT OFFICE’S BURDEN OF PRESENTING A PRIMA FACIE CASE OF OBVIOUSNESS OF CLAIMS 7 AND 10-13 AS BEING UNPATENTABLE UNDER 35 U.S.C. 103(A) OVER TEITEL (US PATENT**

NUMBER 4,211,537) IN VIEW OF APPLEBY (US PATENT NUMBER 5,813,222) AND FURTHER IN VIEW OF TEITEL (US PATENT NUMBER 4,302,217).

Applicants respectfully submit that the Examiner has not met the Patent Office's burden of presenting a prima facie case of obviousness as recited in the MANUAL OF PATENT EXAMINING PROCEDURE 706.02(j) and reproduced below:

**To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.** Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). **The initial burden is on the examiner** to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter.1985). *(emphasis added)*

Thus, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir.2000).

Applicants respectfully submit that there is no suggestion nor motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the teachings of Appleby (U.S. 5,813,222) with the teachings of Teitel (U.S. 4,211,537) or with the teachings of Teitel (US 4,302,217). Applicants further respectfully submit that the references, considered as a whole, do not suggest the desirability and thus the obviousness of making the combination.

Appleby (U.S. 5,813,222) describes a “Method and Apparatus for Heating a Catalytic Converter to Reduce Emissions.” (see title) The invention of Appleby (U.S. 5,813,222) “relates generally to the field of catalysis for the reduction of emissions from internal combustion engines.” (see col. 1, lines 8-10) The invention of Appleby (U.S. 5,813,222) provides a method and apparatus for reducing undesirable emissions from an internal combustion engine. (see col. 3, lines 52 – 54).

Teitel (U.S. 4,211,537) describes “A Hydrogen Supply Method.” (see title) The invention of Teitel (U.S. 4,211,537) describes a method for supplying hydrogen using a “combination of a metal hydride hydrogen storage and microcavity hydrogen storage.” (see col 1, lines 5-8). Teitel (U.S. 4,211,537) does not describe nor suggest the use of such a method in any way related to internal combustion engines.

Teitel (US 4,302,217) is a continuation in part of Teitel (U.S. 4,211,537). It describes a “Hydrogen Supply System.” (see title) The invention of Teitel (US 4,302,217) includes the same system as previously described herein. Teitel (US 4,302,217) does not describe nor suggest the use of such a system in any way related to internal combustion engines.

Applicants respectfully disagrees with the Examiner’s response (see Office Action dated May 26, 2004, page 10 item 4.b.) that the “motivation comes from the desire to have a safer means for hydrogen storage production. The electrolyzer of Appleby is much safer than the hydrogen gas filled capsules of Teitel.” Applicants respectfully submit that there is no teaching, suggestion, or motivation to combine Appleby and both Teitel patents to produce Applicants’ invention found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

Since the Patent Office bears the initial duty of supplying a factual basis supporting a rejection in a patent application, and the Examiner has not met this initial duty as described above, Applicants respectfully request the rejection of Claims 7 and 10-13 be withdrawn and Claims 7 and 10-13 now be passed to allowance.

## **IX. CONCLUSION**

For the foregoing reasons, Appellants submit that the Examiner failed to establish a prima facie case of obviousness of Appellants’ claimed invention in view of the cited references because the combination of cited references, when taken as a whole, fails to disclose or suggest

the various limitations recited in Appellants' Claims 1, 3, 6-17, and 19-21. Therefore, Appellants respectfully request that the Board reverse the Examiner's rejection of Claims 1, 3, 6-17, and 19-21 under 35 U.S.C. § 103(a) and hold Claims 1, 3, 6-17, and 19-21 allowable over the cited references. Reversal of the rejection of all claims is earnestly urged.



**X. APPENDIX**  
**CLAIMS AS PENDING**

1. A hydrogen recharging system for a fuel cell hydride storage reservoir, comprising:
  - an electrolyzer to hydrolyze liquid water to hydrogen gas and oxygen gas, said electrolyzer connected to a water supply;
  - a hydrogen gas accumulator;
  - a dryer situated between and connected to the electrolyzer and the hydrogen gas accumulator, wherein the dryer is adapted to dry the hydrogen gas produced by the electrolyzer, and wherein the hydrogen gas accumulator is adapted to store the dried hydrogen gas; and
  - a heat exchanger coupled to the fuel cell hydride storage reservoir, wherein in response to the coupling of the fuel cell hydride storage reservoir to the hydrogen recharging system, the heat exchanger is adapted to:
    - evacuate the fuel cell hydride storage reservoir by applying heat, and
    - enhance the fuel cell hydride storage reservoir's ability to recharge by removing heat, and
  - further wherein upon detection of the heat removal from the fuel cell hydride storage reservoir the stored hydrogen gas is rapidly transferred from the hydrogen gas accumulator to the hydride storage reservoir, to be retained in the hydride storage reservoir in the form of a metal hydride.
3. The system as described in claim 1, further comprising a pump coupled to the fuel cell hydride storage reservoir to evacuate the fuel cell hydride storage reservoir during heating.
6. The system as described in claim 1, further comprising a vent on the electrolyzer to vent oxygen produced by the electrolyzer to the surrounding environment.
7. The system as described in claim 1, wherein the hydrogen gas accumulator further comprises a compressor.



8. The system as described in claim 1, further comprising a charge meter for measuring the amount of hydrogen transferred to the fuel cell hydride storage reservoir.

9. The system as described in claim 1, wherein the system is contained in a desktop housing less than or equal to one cubic foot in volume.

10. A self-contained hydrogen recharging system for a fuel cell metal hydride storage reservoir, comprising:

a water supply connected to an electrolyzer for converting liquid water to hydrogen and oxygen gas;

hydrogen storage means comprising an accumulator and a compressor;

a dryer situated after the electrolyzer; and

wherein hydrogen gas produced by the electrolyzer is stored in the hydrogen storage means; and

a heat exchanger coupled to the fuel cell hydride storage reservoir, wherein in response to the coupling of the fuel cell hydride storage reservoir to the hydrogen recharging system, the heat exchanger is adapted to:

prior to transfer of the stored hydrogen gas, evacuate the fuel cell hydride storage reservoir by applying heat, and

enhance the fuel cell hydride storage reservoir's ability to recharge by removing heat, during transfer of the stored hydrogen gas; and

wherein the stored hydrogen gas is rapidly transferred to the hydride storage reservoir and stowed in the reservoir as a metal hydride.

11. The system as described in claim 10, further comprising a vent on the electrolyzer to vent oxygen produced by the electrolyzer to the surrounding environment.

12. The system as described in claim 10, further comprising a charge meter for measuring the amount of hydrogen transferred to the fuel cell hydride storage reservoir.

13. The system as described in claim 10, further comprising a vacuum pump for evacuation of the fuel cell hydride storage reservoir.

14. A hydrogen recharging system for a fuel cell hydride storage reservoirs, comprising:

an electrolyzer to hydrolyze liquid water to hydrogen gas and oxygen gas, said electrolyzer connected to a water supply;

a hydrogen gas accumulator for storing hydrogen gas produced by the electrolyzer; and

a heat exchanger coupled to the fuel cell hydride storage reservoir, wherein in response to the coupling of the fuel cell hydride storage reservoir to the hydrogen recharging system, the heat exchanger is adapted to:

evacuate the fuel cell hydride storage reservoir by applying heat, and

enhance the fuel cell hydride storage reservoir's ability to recharge by removing heat, and

wherein upon detection of the heat removal from the fuel cell hydride storage reservoir the stored hydrogen gas is rapidly transferred from the accumulator to the hydride storage reservoir, to be retained in the hydride storage reservoir in the form of a metal hydride.

15. A method of recharging hydrogen within a fuel cell, comprising:

hydrolyzing liquid water to produce a hydrogen gas and an oxygen gas;

drying the hydrogen gas;

storing the dried hydrogen gas in an accumulator;

evacuating a connected hydride storage container by applying heat;

cooling the connected hydride storage container to enhance the efficiency of transfer of the stored hydrogen gas from the accumulator to the connected hydride storage container; and

rapidly transferring the stored hydrogen gas from the accumulator to the connected hydride storage container.

16. A method of recharging hydrogen within a fuel cell as recited in claim 15 further comprising:

detecting the hydride storage container requires replenishment prior to the evacuating step.

17. A method of recharging hydrogen within a fuel cell as recited in claim 15 further comprising:

retaining the hydrogen gas in the hydride storage container in the form of a metal hydride.

19. A method of recharging hydrogen within a fuel cell as recited in claim 15 further comprising:

venting the oxygen gas to a surrounding environment.

20. A method of recharging hydrogen within a fuel cell as recited in claim 15 further comprising:

measuring the amount of hydrogen transferred to the hydride storage container.

21. A method of recharging hydrogen within a fuel cell comprising:

connecting a water supply to the fuel cell;

converting liquid water from the water supply to a hydrogen gas and an oxygen gas using an electrolyzer;

storing the hydrogen gas produced by the electrolyzer in a hydrogen storage means;

heating a hydride storage reservoir for purification of the hydride storage reservoir;

connecting the hydride storage reservoir to the hydrogen storage means;

cooling the hydride storage reservoir to enhance the efficiency of stored hydrogen gas transfer to the hydride storage reservoir; and



opening a valve to rapidly transfer the stored hydrogen gas to the hydride storage reservoir, thereby causing the recharging of the hydride storage reservoir

Respectfully submitted,

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